T 100: Miscellaneous

Time: Friday 9:00–9:45 Location: KH 02.016

T 100.1 Fri 9:00 KH 02.016

On a supplement to special relativity — •Fritz Riehle — Physikalisch Technische Bundesanstalt, Bundesallee 100, 38116 Braunschweig

It is well known that the restricted orthochronous Lorentz transformations form a group which contain the 'right' symmetries (rotations and boosts) of special relativity. They represent direct isometries where not only the magnitude of every angle is preserved but also the sense of the angle (clockwise or counterclockwise). This group is a subgroup in the Poincaré group containing all isometries of Minkowski space. We found that the transformations associated with the derived energy-momentum relationship in Einstein's basement [1] correspond to reflections in velocity space. We investigate how these transformations can be identified with opposite isometries and discuss some of their consequences.

[1] Fritz Riehle and Sebastian Ulbricht, arXiv:2402.13679 [gr-qc]

T 100.2 Fri 9:15 KH 02.016

The mass quantum and the upper limit of particle masses — •Herrmann Hans-Dieter — Berlin

A particle model is proposed living in a circular extra space, called basic space. The particle mass has two sources: The rotational energy of circulating mass quanta and the Coulomb self-energy of circulating elementary charges. The hadron models contain mass quanta enhanced by circulating charge clusters. This allows to calculate particle masses up to the TeV region, however, such particles are not realized in nature. A predicted parton mass at 1.5 TeV could not be found experimentally. The top quark seem to represent the highest model mass realized in nature. Models of the Z and Higgs bosons could not be achieved using the regular model formulas. One obtains plausible models of the bosons only by assuming a cluster splitting from 48 charges per cluster into 2 x 24 or into 3 x 16 charges. We conclude, that masses above the mass of the top quark are not realized. We predict an upper limit of particle masses near the mass of toponium, at around 400 GeV. The planning of future experiments should be focused on particles already discovered such as neutrinos, the Z and the Higgs boson. Possibly the TeV region could be empty of particles. An overview on the dual space concept is given in https://tonsa.de/

T 100.3 Fri 9:30 KH 02.016

Particle QM results are improved by a classical model — •Albrecht Giese — Taxusweg 15, 22605 Hamburg

Quantum mechanics is widely accepted as the correct approach to understanding elementary particles. However, a classical model can provide improved results, including quantitative ones, where QM cannot. Take inertial mass, for example. Here, the classical model is physically more meaningful and produces accurate results, unlike the Higgs model. Another example of the limits of QM is the inadequate definition of the Planck constant, 'h', which leads to measurement deviations. In the history of QM, these deviations have been explained by the introduction of vacuum polarization. However, this is not necessary if 'h' is defined as derived from the model. This also circumvents the inherent problems of vacuum polarization/energy.

For details: www.ag-physics.org/rmass